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**CONTROLLED DOCUMENT**  
EG&G - ROCKY FLATS PLANT  
ENVIRONMENTAL MANAGEMENT

This is a RED Stamp  
**ROCKY FLATS PLANT  
EMD OPERATING  
PROCEDURES MANUAL**

Manual No.: **5-21200-OPS-EE**  
Procedure No.: **Table of Contents, Rev 4**  
Page: **1 of 2**  
Effective Date: **02/18/93**  
Organization: **Environmental Management**

**THIS IS ONE VOLUME OF A SIX VOLUME SET WHICH INCLUDES:**

**VOLUME I: FIELD OPERATIONS (FO)  
VOLUME II: GROUNDWATER (GW)  
VOLUME III: GEOTECHNICAL (GT)  
VOLUME IV: SURFACE WATER (SW)  
VOLUME V: ECOLOGY (EE)  
VOLUME VI: AIR (AP)**

**TABLE OF CONTENTS  
FOR VOLUME V: ECOLOGY**

<b>Procedure No.</b>	<b>Title</b>	<b>Rev. No.</b>	<b>Effective Date</b>
EE.01	Sampling of Periphyton	1	5/91
EE.02	Sampling of Benthic Macroinvertebrates	1	5/91
*DCN 92.01	EXPIRED (Clarification of Benthic Macroinvertebrates) This DCN was extended by DCN 93.01 dated 2/17/93	1	Expired
*DCN 93.01	Clarification of Benthic Macroinvertebrates	1	02/17/93
EE.03	Sampling of Plankton	1	5/91
EE.04.	Sampling of Fishes	1	5/91
*DCN.92.01	EXPIRED (Add Paper Scale Envelopes)	1	Expired
*DCN 92.02	EXPIRED (Clarification of Fish Sampling)	1	Expired
*DCN 92.03	EXPIRED (Clarification of Fish Sampling)	1	Expired
*DCN 92.04	EXPIRED (Clarification of Fish Sampling)	1	Expired
*DCN 92.05	EXPIRED (Clarification of Fish Sampling)	1	Expired
EE.05	Sampling of Large Mammals	1	5/91
EE.06	Sampling of Small Mammals	1	5/91
EE.07	Sampling of Birds	1	5/91

**DOCUMENT CLASSIFICATION REVIEW WAIVER  
PER R.B. HOFFMAN, CLASSIFICATION OFFICE  
JUNE 11, 1991**

**ADMIN RECORD**

A-SW-000553

**ROCKY FLATS PLANT  
EMD OPERATING  
PROCEDURES MANUAL**

**Manual No.: 5-21200-OPS-EE**  
**Procedure No.: Table of Contents, Rev 4**  
**Page: 2 of 2**  
**Effective Date: 02/18/93**  
**Organization: Environmental Management**

<b><u>Procedure No.</u></b>	<b><u>Title</u></b>	<b><u>Rev. No.</u></b>	<b><u>Effective Date</u></b>
EE.08	Sampling of Reptiles and Amphibians	1	5/91
EE.09	Sampling of Terrestrial Arthropods	1	5/91
EE.10	Sampling of Vegetation	1	5/91
DCN 91.01	Superseded by DCN # 92.01	1	08/11/92
*DCN 92.01	EXPIRED (To Clarify Methods for Conducting Vegetation Surveys) This DCN was extended by DCN 93.01 dated 2/17/93	1	Expired
*DCN 93.01	To Clarify Methods for Conducting Vegetation Surveys	1	02/17/93
EE.11	Identification of Habitat Types	1	5/91
EE.12	Sampling of Soil for Soil Description	1	5/91
EE.13	Development of Ecology Field Sampling Plans	1	5/91
DCN 91.01	Superseded by DCN # 92.01	1	08/11/92
*DCN 92.01	EXPIRED (The Outline for a Field Sampling Plan is Modified) This DCN was extended by DCN 93.01 dated 2/17/93	1	Expired
*DCN 93.01	The Outline for a Field Sampling Plan is Modified	1	02/17/93
APPA	Appendix A: Species Codes Assignment of Species Codes	1	5/91
APPB	Appendix B: Wildlife Habitat Code Assignment of Wildlife Habitat Codes	1	5/91

ENVIRONMENTAL MANAGEMENT  
DOCUMENT CHANGE NOTICE (DCN)

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Procedure Number 5-21200-OPS-EE.02, Rev. 1 DF  
MCB 2/15/93

Page 1 of 1

Title	Sampling of Benthic Macroinvertebrates	Date	2/17/93	DCN Number	5-21200-93.01
Expires	2/17/94	Procedure Revision Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Scope Limitation	N/A				

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
1	13	6.3.2	Delete "distilled" in the fifth bullet.
2	13	6.3.3	Replace the first sentence with the following: "Transfer the sample from the bucket or tub into the sample container using a squirt bottle and distilled, tap, or local water, according to the project FSP, taking precautions so foreign material is not introduced into the sample."

Justification (Reason for Change – Provide Numbers To Reference Corresponding Items Above)

1 and 2. This is an extension for expired DCN 92.01 during which time the SOP is being revised to incorporate this DCN.

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Concurrence	Organization	Req	Date	Concurrence	Organization	Req	Date
<i>[Signature]</i>	QAPM	X	2/16/93	<i>[Signature]</i>	User	X	1/22/93
				<i>[Signature]</i>	FOM		2/3/93
				<i>[Signature]</i>	EQS		2/15/93
				<i>[Signature]</i>	ERS		
Approval of Responsible Manager	Date	Is Posting Req'd?	If Yes, By What Date?	Date Posted			
<i>[Signature]</i>	1/22/93	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Upon receipt				

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Procedure Number 5-21200-OPS-EE.10, Rev 1, DF  
 MCB 2/15/93

Page 1 of 1

Title	Sampling of Vegetation	Date	2-17-93 <del>1/20/93</del> MCB 2/15/93	DCN Number	5-21200-93.01
Expires	<del>1/20/93</del> 2/17/94 MCB 2/15/93	Procedure Revision Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Scope Limitation	N/A				

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
1	6	Bullet 4	Walk along the transect and record each plant (by species) intercepted ("hit") by the tape measure at each 0.5m intervals (i.e. 100 hits per 50m transect). The meter mark on the edge of the tape (always right or always left) is the "point." A point frame or ocular sighting device may be used to define the point at each 0.5m interval. (All units will be measured to +/- 10%).
2	7	Bullet 6	If the FSP specifies conducting a "preliminary" vegetation survey, then the configuration of sampling points may be varied as necessary to allow the collection of data more rapidly. Configuration of sampling must be kept consistent among transects where data are to be pooled. Data collected during preliminary surveys under different sampling configurations must be restricted in its use for comparisons between transects and limited to the purpose set out in the FSP. The configuration/method used shall be recorded in the comment section of the field form.  The measured units are the only change. The rest of the information is for clarification. LW 2/16/93

Justification (Reason for Change - Provide Numbers To Reference Corresponding Items Above)

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				<i>[Signature]</i>	FOM		2/3/93
				<i>[Signature]</i>	EQS		2-15-93
				<i>[Signature]</i>	EQS		
Approval of Responsible Manager	Date	Is Posting Req'd?	If Yes, By What Date?	Date Posted			
<i>[Signature]</i>	1/22/92	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Upon receipt				

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Procedure Number 5-21200-OPS-EE.13, Rev. 1 DF  
MCB 2/15/93

Page 1 of 5

Title	Development of Ecology Field Sampling Plans	Date	<u>2-17-93</u> <u>1/20/93</u> <u>MCB 2/10/93</u>	DCN Number	5-21200- <u>93.01615</u>
Expires	<u>1/20/93</u> <u>2/17/94</u> <u>MCB 2/10/93</u>	Procedure Revision Required	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		
Scope Limitation	<u>N/A</u>				

Item Number	Page	Step or Paragraph	Changes (Use DCN CONTINUATION SHEET for Additional Space)
1	20	Sec. 6.5	The outline for a field sampling plan shall be modified as per Attachment 1. (See Attachment).

Justification (Reason for Change – Provide Numbers To Reference Corresponding Items Above)

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				<u>[Signature]</u>	FOM		<u>2/3/93</u>
				<u>[Signature]</u>	EQS		<u>2-15-93</u>
				<u>[Signature]</u>	EQS		
Approval of Responsible Manager	Date	Is Posting Req'd?	If Yes, By What Date?	Date Posted			
<u>[Signature]</u>	<u>1/22/93</u>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Upon receipt				

## Field Sampling Plan Outline

DCN # 93.01

### I. Site Background

#### A. Study site detail

1. Operable Unit description
  - a. location at RFP, areal extent including potential zone of influence
  - b. IHSS's within the OU
  - c. overview of the ecology at the OU
    1. vegetation / habitats
    2. wildlife
    3. aquatics / habitats
2. Synopsis of OU specific contamination information
  - a. Brief summary of RI activities completed at the site to-date
  - b. List of contaminants detected at the OU
  - c. References to other documents containing RI results
3. Preliminary toxicity assessment
  - a. Summary of the concentrations of contaminants detected
  - b. Standards, ARARs, or limits set for the ecology risk assessment
  - c. Summary of contaminant levels exceeding applicable limits
  - d. Brief assessment of potential exposure pathways for biota

### II. Program Objectives

#### A. Purpose and scope of Environmental Evaluations

1. Purpose and scope of the OU EE
2. General objectives of the OU EE
3. Summary of EE DQOs

#### B. Purpose and scope of the Field Sampling Plan

1. FSP application of COCs
2. FSP application of selected Target Taxa

#### C. General Field Sampling Approach

1. ecological studies
2. analytical studies

### III. Habitat and Taxon-Specific Sampling

#### A. Study Locations

1. Sampling Sites
  - a. rationale for OU sampling site selection
  - b. identification of OU sampling sites
2. Reference Sites
  - a. rationale for reference site selection
  - b. identification of reference sites
  - c. Differences between study sites and reference sites
3. Overlap of study objectives among different OUs

#### B. Terrestrial sampling

1. Plants
  - a. Sampling objectives
  - b. Sample locations
    1. study sites

DCN # 93.01

- 2. reference sites
    - c. Sampling equipment and procedures
      - 1. state methods and reference SOPs
    - d. Sampling frequency
      - 1. list sample size
      - 2. sample times and dates
    - e. QA/QC sampling
  - 2. Insects
    - a. Sampling objectives
    - b. Sample locations
      - 1. study sites
      - 2. reference sites
    - c. Sampling equipment and procedures
      - 1. state methods and reference SOPs
    - d. Sampling frequency
      - 1. list sample size
      - 2. sample times and dates
    - e. QA/QC sampling
  - 3. Birds
    - a. Sampling objectives
    - b. Sample locations
      - 1. study sites
      - 2. reference sites
    - c. Sampling equipment and procedures
      - 1. state methods and reference SOPs
    - d. Sampling frequency
      - 1. list sample size
      - 2. sample times and dates
    - e. QA/QC sampling
  - 4. Mammals
    - a. Sampling objectives
    - b. Sample locations
      - 1. study sites
      - 2. reference sites
    - c. Sampling equipment and procedures
      - 1. state methods and reference SOPs
    - d. Sampling frequency
      - 1. list sample size
      - 2. sample times and dates
    - e. QA/QC sampling
- C. Aquatic sampling
- 1. Plants
    - a. Sampling objectives
    - b. Sample locations
      - 1. study sites
      - 2. reference sites
    - c. Sampling equipment and procedures
      - 1. state methods and reference SOPs

- d. Sampling frequency
  - 1. list sample size
  - 2. sample times and dates
- e. QA/QC sampling
- 2. Invertebrates
  - a. Sampling objectives
  - b. Sample locations
    - 1. study sites
    - 2. reference sites
  - c. Sampling equipment and procedures
    - 1. state methods and reference SOPs
  - d. Sampling frequency
    - 1. list sample size
    - 2. Sample times and dates
  - e. QA/QC sampling
- 3. Amphibians
  - a. Sampling objectives
  - b. Sample locations
    - 1. study sites
    - 2. reference sites
  - c. Sampling equipment and procedures
    - 1. state methods and reference SOPs
  - d. Sampling frequency
    - 1. list sample size
    - 2. sample times and dates
  - e. QA/QC sampling
- 4. Fishes
  - a. Sampling objectives
  - b. Sample locations
    - 1. study sites
    - 2. reference sites
  - c. Sampling equipment and procedures
    - 1. state methods and reference SOPs
  - d. Sampling frequency
    - 1. list sample size
    - 2. Sample times and dates
  - e. QA/QC sampling

#### IV. Contaminants of Concern and Target Taxa

##### A. Contaminants of Concern (COC)

- 1. Criteria for selection of COCs
- 2. Preliminary selection of COCs
  - a. Justification for application of selection criteria

##### B. Ecological receptors of concern

- 1. Criteria for selection of ecological receptors of concern
- 2. Preliminary taxa and tissues selected as ecological receptors of concern
  - a. Justification for application of selection criteria



DCN # 93.01

## V. Sample Handling and Analysis

### A. Terrestrial

1. Sample designation
  - a. taxa
  - b. tissues
  - c. number of samples and sample coding
  - d. samples from study sites vs. samples from reference sites
  - e. laboratory QA sample requirements
2. Chemical analyses
  - a. selection of target analytes
  - b. laboratory requirements
    1. sample volumes
    2. sample preservation & handling
3. Terrestrial Sampling Matrix

### B. Aquatic

1. Sample designation
  - a. taxa
  - b. tissues
  - c. number of samples and sample coding
  - d. samples from study sites vs. samples from reference sites
  - e. laboratory QA sample requirements
2. Chemical analyses
  - a. selection of target analytes
  - b. laboratory requirements
    1. sample volumes
    2. sample preservation & handling
3. Aquatic Sampling Matrix

## VI. Toxicity Testing

1. Sampling objectives
2. Sample locations
  - a. media to be collected
3. Sampling equipment and procedures (reference to SOPs)
4. Sampling frequency
5. QA/QC sampling
6. Sample Handling and Analyses
  - a. species and protocols used
  - b. laboratory QA

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APPLICABLE SECTION: EE.2.R1 DCN NUMBER: 92.01

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APPLICABLE SECTION: EE.4.R1 DCN NUMBER: 92.03

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APPLICABLE SECTION: EE.4.R1 DCN NUMBER: 92.04

COMMENTS: EXPIRED 11/24/92

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APPLICABLE SECTION: EE.4.R1 DCN NUMBER: 92.05

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APPLICABLE SECTION: EE.10.R1 DCN NUMBER: 92.01

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